

To: Weaver, Christine[CWeaver@mt.gov]
From: Kusnierz, Lisa
Sent: Wed 8/19/2015 2:37:47 PM
Subject: Question Re: Calculating the critical effluent concentration
Water Quality Guidance for the Great Lakes System (60 FR 15366).pdf

Hey,

I'm wondering about how your group calculates the critical effluent concentration for nutrient data. I was thinking most facilities report monthly average values and that it would be based on the maximum of that for the growing season, but then started thinking about whether all of the growing season raw data are considered, and if the process is different if a facility doesn't report monthly averages?

The *Final Water Quality Guidance for the Great Lakes System* (60 FR 15366) (attached) lays out procedures for measuring Projected Effluent Quality (PEQ) in Appendix F, Procedure 5, Section B (60 FR 15420) where under Item 2:

“The permitting authority shall calculate a PEQ as the 95th percentile of the distribution of the projected population of [daily values, monthly averages, or weekly averages] of the facility-specific effluent monitoring data using a scientifically defensible statistical method that accounts for and captures the long-term variability of the [daily, monthly average, or weekly average] effluent quality, accounts for limitations associated with sparse data sets and, unless otherwise shown by the effluent data set, assumes a lognormal distribution of the facility-specific effluent data...”

Based on a review I did, a number of facilities are reporting effluent nutrients data as monthly averages, weekly averages, or quarterly averages. Other facilities are not reporting monthly average-based values. The following table summarizes the frequency of analysis and statistical basis reported in their DMRs.

Table 1. Facilities without Monthly Average Reporting of Nutrients

NPDESName ID	Frequency of Analysis (Required)	Frequency of Analysis (Reporting)	Statistical Basis	Pollutants	Notes
MT00200152 of	City Quarterly	Quarterly* (*portions of the	Quarterly Average	TN, TKN, NO3+NO2, TP	

			DMR data set)		
MT0020079	Coonrad, City of	Monthly Quarterly	Monthly* Quarterly*	Daily Maximum Single Sample (4/10-12/11); Quarterly Average (1/12-present)	NO3+NO2 TN, TKN, TP
MT0020516	Waukegan, City of	Quarterly		Single Sample (4/10-3/12); Value (6/12-present)	TN, TKN, NO3+NO2, TP
MT0025750	Winnebago County	Quarterly		Single Sample	TKN, NO3+NO2, TP
MT0021457	Manhattan, City of	Monthly (9/10-present) Quarterly (4/10-6/10, 10/10-present)		Daily Maximum Single Sample	NO3+NO2 TN, TKN, TP
MT0021462	Clinton, Town of	Monthly (4/10-7/10) Quarterly (8/10-present)		Single Sample Quarterly Total	TN, TKN, NO3+NO2, TP TN, TKN, NO3+NO2, TP
MT0030295	Redup, City of	Monthly (11/13-present) Quarterly (4-10-present)		Daily Maximum Single Sample	NO3+NO2 (11/13-present) TN, TKN, NO3+NO2 (4/10-9/13 only), TP
MT0030308	Grass Range, Town of	Quarterly		Single Sample (4/10-6/11), 90-day Average (10/11-present)	TN, TKN, NO3+NO2, TP

DMR reports no discharge during mon when criteria apply (C0)

Do you use a procedure where if monthly averages are available, then the 95th percentile concentration would be based on the highest reported monthly average and would be calculated using a modified TSD procedure that follows the Great Lakes Guidance, where $\sigma^2 = \ln((CV^2/30) + 1)$?

If only single sample or daily maximums are available, do you determine the 95th percentile concentration using TSD procedures by way of Table 3-2 in the TSD?

It seems like this would ensure that, where available, the critical effluent concentration would be in line with the duration of the water quality criteria. Thanks for your help clarifying the process for me!

Lisa

